



LONGCROFT WIND FARM

Technical Appendix 9.4

WINTERING BIRD SURVEYS

Report to Renewable Energy Systems Ltd



Ecology Consulting

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TABLE OF CONTENTS

TABLE OF CONTENTS	2
INTRODUCTION	3
STUDY AREA	3
WINTERING BIRD SURVEY METHODS	3
Autumn/Winter Walkover Surveys	4
Vantage point surveys	4
WINTERING BIRD SURVEY RESULTS	5
Walkover Surveys.....	5
Vantage Point Survey Results: Autumn/Winter 2021-22	6
Conservation Evaluation of Wintering Bird Populations.....	7
CONCLUSIONS	16
REFERENCES	16
APPENDIX 1. VANTAGE POINT SURVEY DATA	18
Survey Information	18
Key Species Data	19

Cover photos © Steve Percival:

Top left - Pink-footed Geese

Top right – Red Grouse



LONGCROFT PROPOSED WIND FARM: WINTERING BIRD SURVEYS 2022-23

INTRODUCTION

1. This report describes the wintering bird survey work carried out for the proposed development. It provides a second wintering season's baseline data on the bird populations, activity and flight paths within the vicinity of the site, to inform subsequent ornithological impact assessment.
2. The surveys have been designed with reference to current NatureScot survey guidance on bird surveys for wind farms (SNH 2017). The surveys were undertaken by Stuart Piner, a highly experienced bird surveyor.
3. The site lies within the potential Special Protection Area (SPA) connectivity distance from the Fala Flow SPA (which lies 8km north-west from the site) and Greenlaw Moor SPA (15km south-east), Pink-footed geese are a qualifying feature for both these SPAs and have a core range of 15-20km (SNH 2016). The site is not, though, within a known goose feeding area (Mitchell 2012).

STUDY AREA

4. The site is located about 6km north from Lauder in the Scottish Borders. The wintering bird survey area was chosen to include all areas within the possible zone of ornithological influence of the proposed development. This included the site, plus a 500m buffer (following NatureScot guidance, SNH 2017). Access to a wider area around this was not possible because of landownership restrictions. The extent of the survey area is shown in Figure 1. The site (to which full access was allowed) covered a total area of 12.7km², and the area including 500m buffer 22.0km². Access into the 500m buffer except to the south-west of the site was not possible and was surveyed by viewing into it from the site. The survey area comprised predominantly upland moorland habitat, currently used mainly for rearing gamebirds for commercial shooting and for grazing sheep. It lies within the '*Border Hills*' NatureScot Natural Heritage Zone (NHZ 20).

WINTERING BIRD SURVEY METHODS

5. The aim of the autumn/winter field survey work was to obtain data on the ornithological importance of the site and its surrounds at that time of year, and on the flight lines of key target species. It included walkover surveys of the site and vantage point (VP) surveys of bird flight activity. These followed the same survey methodologies used in the previous 2021-22 winter.



Wider area surveys for wintering waterfowl were not undertaken as there was no important waterfowl habitat within 2km.

Autumn/Winter Walkover Surveys

6. Walkover mapping surveys of the wintering birds within the site boundary and viewing out over a 500m buffer (see Figure 1). Access was not possible outside the site. The survey focused on key target species which included all EU Birds Directive Annex 1 species, Wildlife & Countryside Act (1981) Schedule 1 species and Red-listed birds of Conservation Concern (Stanbury *et al.* 2021), as per NatureScot (SNH 2017).
7. As well as counting and mapping each species, the behaviour of each flock was also recorded, e.g. feeding/roosting. The surveys included work at dawn and dusk to check the area specifically for roosting hen harriers and other important raptors. A total of seven surveys were undertaken at approximately monthly intervals between September 2022 and March 2023.

Vantage point surveys

8. VP surveys were carried out to determine bird flight activity within the site to assess collision risk. The surveys quantified the bird numbers that could potentially be at risk of collision (including roost flight observations at dawn/dusk). All flight lines of target species were mapped, and the flight height of each flock was recorded. Target species were the same as those for the walkover surveys.
9. The specific aim of the VP surveys was to collect data on key target species flight activity to enable estimates to be made of:
 - The time spent flying over the survey area.
 - The relative use made of different parts of the survey area.
 - The proportion of flying time spent at different elevations above the ground.
10. Three VPs were used to cover the site. The computer-generated viewsheds (using Global Mapper v21) are shown in Figure 1. For each VP, 42 hours' VP surveys were carried out during the autumn/winter from each VP, spread evenly across the winter season (6 hours at each VP each month). Details of survey dates, times and conditions are given in Appendix 1.
11. All key target species flights (and any other species of specific nature conservation interest) were recorded, irrespective of their distance from the VP. Observations were carried out throughout daylight hours but not in periods of severely reduced visibility (<3km).
12. During the VP surveys, all key target species flights were mapped and cross-referenced to a standard recording form using a numbering system, and the flight height of each was recorded. To estimate flight height as accurately as possible available reference structures (e.g. pylon lines) were used. Heights were estimated as accurately as possible and recorded as a raw estimate rather than being summarised into height classes. Below 10m estimates were made to 1m, between 10m and 20m to 2m, between 20m and 50m to 5m, and above 50m to 10m. When birds were observed over an extended period, estimates of flight height were recorded every 30 seconds. The activity during each flight was also recorded. Particular attention was paid to any observations of birds at rotor height.



WINTERING BIRD SURVEY RESULTS

Walkover Surveys

13. The bird populations found within the survey area during each of the monthly walkover surveys are summarised in Table 1. The Table shows the peak numbers recorded during each month and the overall peak counts. The peaks recorded in 2021-22 are given for comparison.

Table 1. Autumn/winter bird populations recorded in the survey area during the September 2022 - March 2023 walkover surveys (monthly peak counts).

Species	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Peak 2022-23	PEAK 2021-22
Pink-footed Goose	49	0	0	21	0	0	48	49	80
Greylag Goose	9	24	2	0	0	13	11	24	226
Mallard	0	2	2	5	2	20	4	20	17
Goosander	0	0	2	0	0	0	0	2	2
Red Grouse	15	-	-	-	-	-	-	15	218
Grey Heron	3	0	1	0	0	0	0	3	0
Red Kite	1	0	0	0	1	0	0	1	4
Hen Harrier	0	0	0	0	1	0	0	1	0
Sparrowhawk	1	1	1	0	0	1	0	1	0
Buzzard	26	8	15	15	8	12	4	26	32
Kestrel	0	1	0	1	0	0	1	1	3
Merlin	0	0	0	0	0	0	1	1	0
Peregrine	1	0	0	0	0	0	0	1	1
Oystercatcher	0	0	0	0	0	0	4	4	4
Golden Plover	0	0	0	0	0	1	0	1	37
Lapwing	0	0	0	0	0	1	36	36	36
Jack Snipe	0	0	1	1	0	0	0	1	0
Snipe	0	9	1	11	8	0	2	11	4
Woodcock	0	0	1	2	6	0	2	6	1
Herring Gull	0	0	0	0	1	4	0	4	101

* Pink-footed goose records were all over-flying migrant flocks. Red grouse only surveyed on September visit.



Vantage Point Survey Results: Autumn/Winter 2021-22

14. The rates of bird flight movement observed across the survey area during the VP surveys in 2022-23 are summarised in Table 2. This gives the flight rate per hour recorded in each month and the total number of flights recorded. Pink-footed goose was the most frequently recorded target species. Flight rates of other species were generally low, though did include records of several key raptors (red kite, hen harrier, goshawk, merlin, peregrine and short-eared owl) and occasional larger flocks of golden plover and lapwing. Further details of key species' flights are given in Appendix 1.
15. Table 3 gives the results from the previous 2021-22 surveys for comparison. Similar levels of flight activity were recorded then too (Percival *et al.* 2022), though the brief period of barnacle goose migration over the site picked up in October 2021 was not recorded during the October 2022 VP surveys. Scarce raptors (particularly goshawk and hen harrier) were recorded less frequently in 2022-23.
16. Tables 2 and 3 also gives the percentage of flights of each species that were recorded at rotor height (between 50m and 220m above ground level). The percentage of flights at rotor height was generally similar between the two years.

Table 2. Bird flight rates recorded over the survey area during the September 2022 - March 2023 vantage point surveys. N = 42 hours total observation from each of the three VPs.

Species	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total over-flying	% at rotor height
Whooper Swan	0.44	0	0	0	0	0	0	8	100%
Pink-footed Goose	36.33	8.06	0	0	5.28	0	0	894	16%
Greylag Goose	5.44	15.50	0.06	0.83	0.17	1.22	2.94	471	72%
Grey Heron	0.06	0	0	0.06	0	0	0	2	100%
Red Kite	0.89	0.11	1.61	0.06	0.06	0.39	0.11	58	45%
Hen Harrier	0	0	0	0.11	0	0	0	2	0%
Goshawk	0	0	0.06	0	0	0.06	0.06	3	67%
Sparrowhawk	0	0	0	0	0.06	0	0.06	2	0%
Buzzard	1.39	0.89	0.50	0.67	0.56	0.67	0.39	91	68%
Golden Eagle	0	0.06	0	0	0	0	0	1	100%
Kestrel	0	0.17	0	0	0	0	0.06	4	0%
Merlin	0.06	0.06	0	0.06	0	0	0	3	0%
Peregrine	0.22	0.06	0	0.06	0	0.11	0	8	88%
Golden Plover	0	0.83	2.17	0	0.33	0	9.22	226	43%
Lapwing	0	0	0	0	0	1.39	6.94	150	60%
Snipe	0	0.06	0	0.06	0	0	0	2	100%
Common Gull	0	0	0	0.72	0	0.22	0	17	67%
Herring Gull	0	0.17	0	3.06	1.39	0	0.33	89	100%
Great Black-backed Gull	0.11	0	0	0	0	0	0	2	50%





Table 3. Bird flight rates recorded over the survey area during the September 2021 - March 2022 vantage point surveys. N = 42 hours total observation from each of the three VPs.

Species	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total over-flying	% at rotor height
Pink-footed Goose	2.83	10.33	7.71	0	5.68	0	0	584	38%
Greylag Goose	3.92	2.56	0.75	0	2.92	0	1.97	261	41%
Goosander	0	0	0	0	0	0	0.03	1	0%
Red Grouse	0	1.67	0	0	0	0	0	30	0%
Red Kite	0.17	0.06	0.04	0	0	0	0.07	6	33%
Hen Harrier	0	0	0	0	0	0	0.03	1	0%
Buzzard	2.33	0.33	0.92	0.40	0.22	0.50	0.10	71	52%
Kestrel	0	0.06	0.04	0	0	0	0.03	3	0%
Merlin	0	0.06	0	0	0.03	0	0	2	0%
Peregrine	0	0.06	0.08	0	0	0.17	0	4	50%
Golden Plover	0	1.22	6.67	0	5.27	0	0.95	376	35%
Lapwing	0	0	0	0	0	0	2.07	61	75%
Snipe	0.25	0	0	0	0	0	0	3	0%
Curlew	0	0	0	0	0	0	0.03	1	0%
Lesser Black-backed Gull	0	0	0.04	0	0	0	0	1	100%
Herring Gull	0	0	1.50	1.60	9.49	7.00	0.03	386	79%
Great Black-backed Gull	0	0	0.04	0	0	0	0	1	100%

Conservation Evaluation of Wintering Bird Populations

17. The conservation value of the wintering bird populations was determined using the criteria specified in Table 4 (from Percival 2007) and is summarised in Table 5. This includes the criteria adopted by NatureScot in the Guidelines for Selection of Biological SSSIs (Drewitt *et al.* 2020), using 1% of the resource to define international and national importance (Frost *et al.* 2021). An additional category of regional importance was assigned for species approaching the threshold for national importance and those for which the survey area held a notable concentration in a county context. A further category of ‘local importance’ was used for species that did not reach regional importance but were still of some ecological value. This included all species on the red or amber lists of the ‘Birds of Conservation Concern’ (Stanbury *et al.* 2021) that did not reach national or regional importance at the development site. National (GB) and International wintering waterfowl baseline populations have been taken from the most recently published population figures (Frost *et al.* 2021) from the national Wetland Birds Survey and other species from Woodward *et al.* (2020). Regional (Natural Heritage Zone, NHZ) populations were taken





from Wilson *et al.* (2015). The site lies within the ‘Border Hills’ NatureScot Natural Heritage Zone (NHZ20). In addition, listing on Annex 1 of the EU Birds Directive, Schedule 1 of the Wildlife and Countryside, UK BAP priority species and Scottish BAP species were all considered in the evaluation process.

Table 4. Definition of terms relating to the sensitivity of the ornithological receptors at the site.

Conservation Value	Definition
VERY HIGH	Cited interest of SPAs, SACs and SSSIs. Cited means mentioned in the citation text for the site as a species for which the site is designated (SPAs/SACs) or notified (SSSIs).
HIGH	Other species that contribute to the integrity of a SPA or SSSI. A local population of more than 1% of the national population of a species. EU Birds Directive Annex 1, EU Habitats Directive priority habitat/species and/or W&C Act Schedule 1 species. Ecologically sensitive species, e.g. large birds of prey or rare birds (<300 breeding pairs in the UK).
MEDIUM	Regionally important population of a species, either because of population size or distributional context. UK BAP priority species (if not covered above).
LOW	Any other species of conservation interest, e.g. species listed on the Birds of Conservation Concern not covered above. Scottish BAP species (if not covered above).

18. The conservation value of the wintering bird populations observed in the survey area during the wintering bird surveys has been summarised in Table 5 below. This included eight high sensitivity species (whooper swan, red kite, hen harrier, goshawk, golden eagle, peregrine, merlin and golden plover) that are EU Birds Directive Annex 1/Wildlife and Countryside Act Schedule 1 species, four medium sensitivity species (UK BAP priority/red-listed species of conservation concern); red grouse, lapwing, curlew and herring gull); and ten low sensitivity species.

Table 5. Conservation evaluation of the wintering bird populations in the survey area, September–March 2021-22 and 2022-23.

Species	Peak 21-22	Peak 22-23	EU Birds Dir Ann 1	W and C Act Sch 1	Red [R]/ Amber [A] List	UK BAP priority sp	Scottish BAP sp	Conservation Value
<i>Whooper Swan</i>	0	8	✓	✓	A		✓	High
<i>Pink-footed Goose</i>	80	49			A			Low
Greylag Goose	226	24			A			Low
Mallard	17	20			A			Low
Goosander	2	2						Nil
Red Grouse	218	15				✓		Medium





Species	Peak 21-22	Peak 22-23	EU Birds Dir Ann 1	W and C Act Sch 1	Red [R]/ Amber [A] List	UK BAP priority sp	Scottish BAP sp	Conservation Value
Red Kite	4	4	✓	✓			✓	High
Hen Harrier	0	1	✓	✓	R		✓	High
Goshawk	1	1		✓				High
Sparrowhawk	0	1			A			Low
Buzzard	32	26						Nil
Golden Eagle	0	1	✓	✓			✓	High
Kestrel	3	1			A		✓	Low
Merlin	1	1	✓	✓	R		✓	High
Peregrine	1	1	✓	✓			✓	High
Oystercatcher	4	4			A			Low
Golden Plover	37	75	✓				✓	High
Lapwing	36	36			R	✓	✓	Medium
Jack Snipe	0	1						Nil
Snipe	4	11			A			Low
Woodcock	1	6			R		✓	Low
Curlew	19	0			R	✓	✓	Medium
Lesser Black-backed Gull	1	0			A			Low
Herring Gull	101	4			R	✓	✓	Medium
Great Black-backed Gull	4	1			A			Low

Note: species in italics seen over-flying only.

19. The 2021-22 and 2022-23 wintering bird surveys found a range of wintering bird populations of conservation importance but with generally only low numbers within/in proximity to the site in numerical terms and/or in the context of their regional (NHZ) populations. Key wintering bird populations recorded included:
- Over-flying **Pink-footed Geese** - pink-footed geese were occasionally seen over-flying through the winter (Figure 2) (18 flocks in total in 2022-23, compared with 9 in the previous winter, and an increase in total numbers). None were seen on the ground during any of the surveys. The only impact of the proposed development on this species would be collision risk, which, given the numbers observed, would be unlikely to be significant. There was no evidence of any clear ecological link to the Fala Flow or Greenlaw Moor SPAs.
 - Red Kite** - there were more records of this species during the VP surveys in 2022-23 than in 2021-22 (58 flights compared with 6 in the previous winter, see Figure 3), including flights

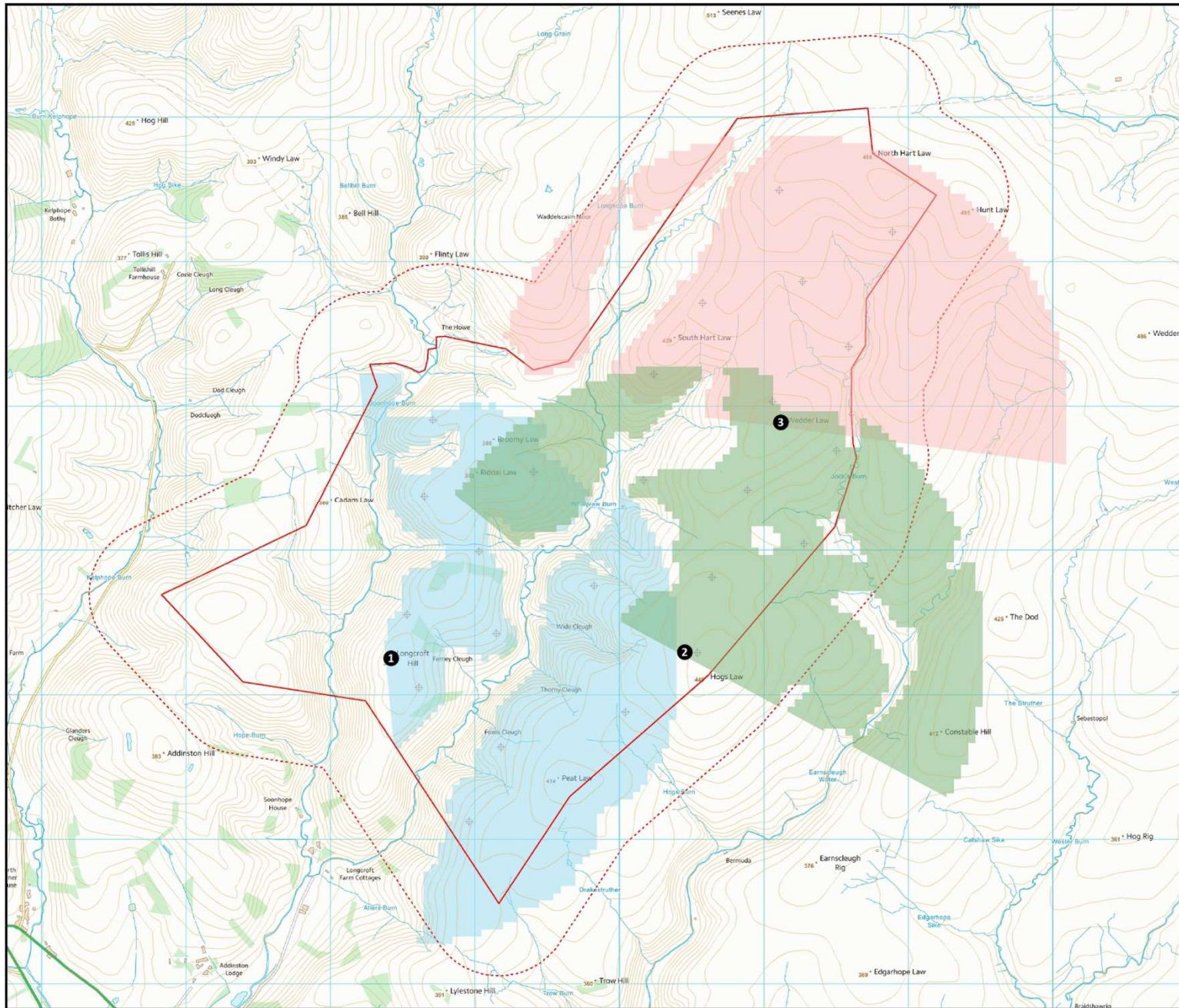




over the site, but no evidence that the site was of particular importance, and no notable concentrations of activity.

- **Red Grouse** – the site supports a high resident population of red grouse for commercial shooting. These birds were distributed widely across all of the higher heather-dominated habitat within the survey area.
 - **Golden Plover** – this species did use the site occasionally during the winter (Figure 4) but only in small numbers, both numerically and in the context of the regional population.
 - **Golden Eagle** – a tagged golden eagle, likely to have been a bird from the South of Scotland Golden Eagle Group release scheme, was observed at the site during the 2022 breeding bird surveys. There was a further single record on 13/10/22 (Figure 5). It is recommended that this group should be contacted to obtain data on their tagged birds using this area, to further inform the ornithological assessment.
 - Other scarce raptors – **hen harrier**, **goshawk**, **merlin** and **peregrine** were all recorded during the winter surveys, but only infrequently in low numbers (VP survey flight lines are shown in Figure 5). No evidence was found of any raptor night roosts in the survey area. There was no indication that the survey area was important to any of these species.
20. Overall, the wintering bird survey results did not indicate any specific ornithological issues that would require taking into account in the design process, or which would be likely to result in any significant impact from a wind farm at this location.





**Longcroft Wind Farm:
Wintering Birds 2022-23**

FIGURE 1

**Wintering Bird Survey
Area and VP Viewshed**

KEY:

- VP Locations
- Contour lines
- Viewshed VP1
- Viewshed VP2
- Viewshed VP3
- - - Site Boundary Buffer 500m
- ▭ Site Boundary
- ⊕ Turbines (scoping)



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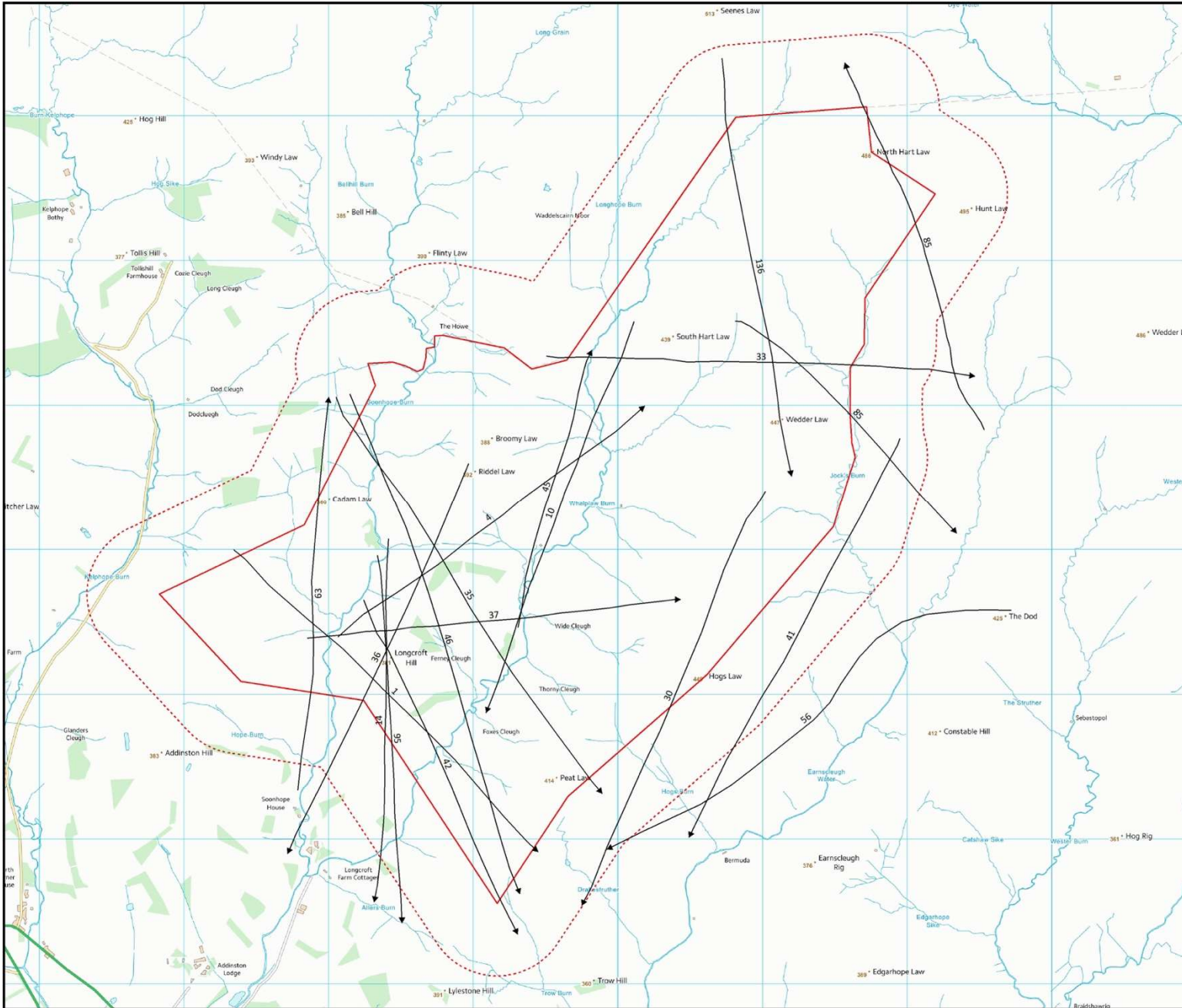
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WINTERING BIRD SURVEYS 2022-23

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**Longcroft Wind Farm:
Wintering Birds 2022-23**

FIGURE 2

**Pink-footed Goose
Flight Lines**

KEY:

- Flight lines 2022-23
- - - Site Boundary Buffer 500m
- Site Boundary



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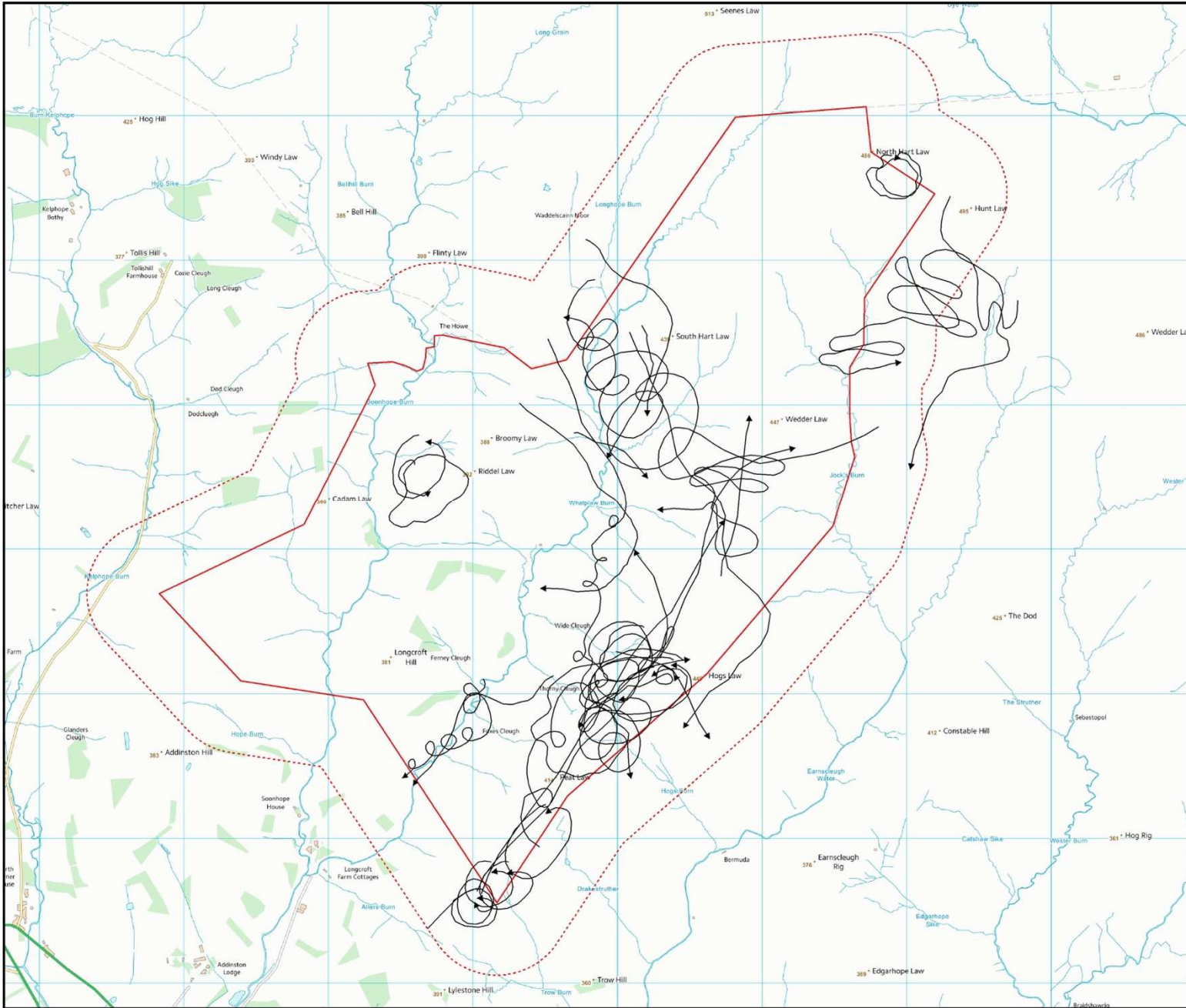
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WINTERING BIRD SURVEYS 2022-23

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**Longcroft Wind Farm:
Wintering Birds 2022-23**

FIGURE 3

**Red Kite
Flight Lines**

KEY:

- Flight lines 2022-23
- - - Site Boundary Buffer 500m
- Site Boundary



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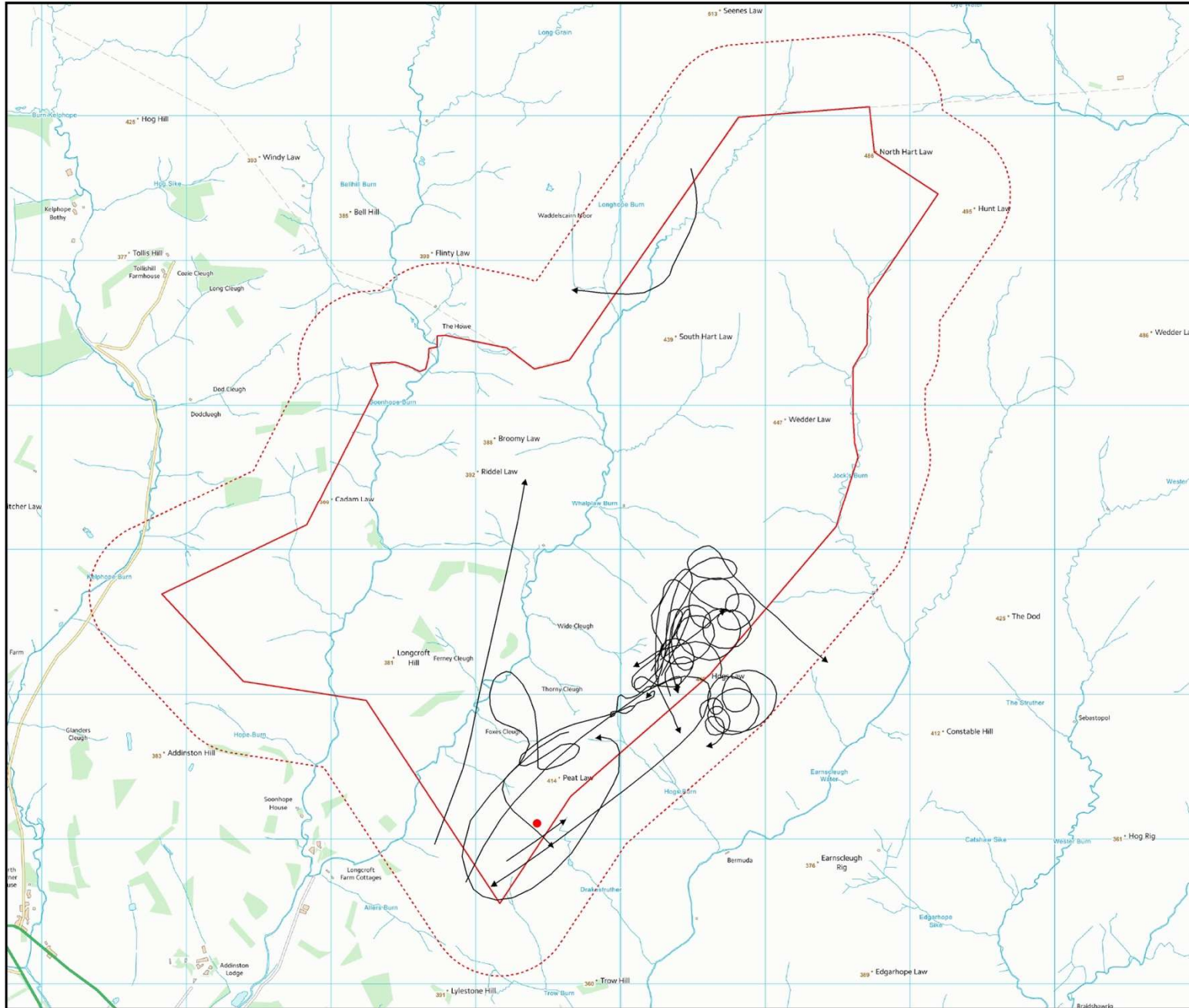
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**WINTERING BIRD
SURVEYS 2022-23**

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**Longcroft Wind Farm:
Wintering Birds 2022-23**

FIGURE 4

**Golden Plover
Flight Lines**

KEY:

- Walkover Data 22-23
- Flight lines 2022-23
- - - Site Boundary Buffer 500m
- ▭ Site Boundary



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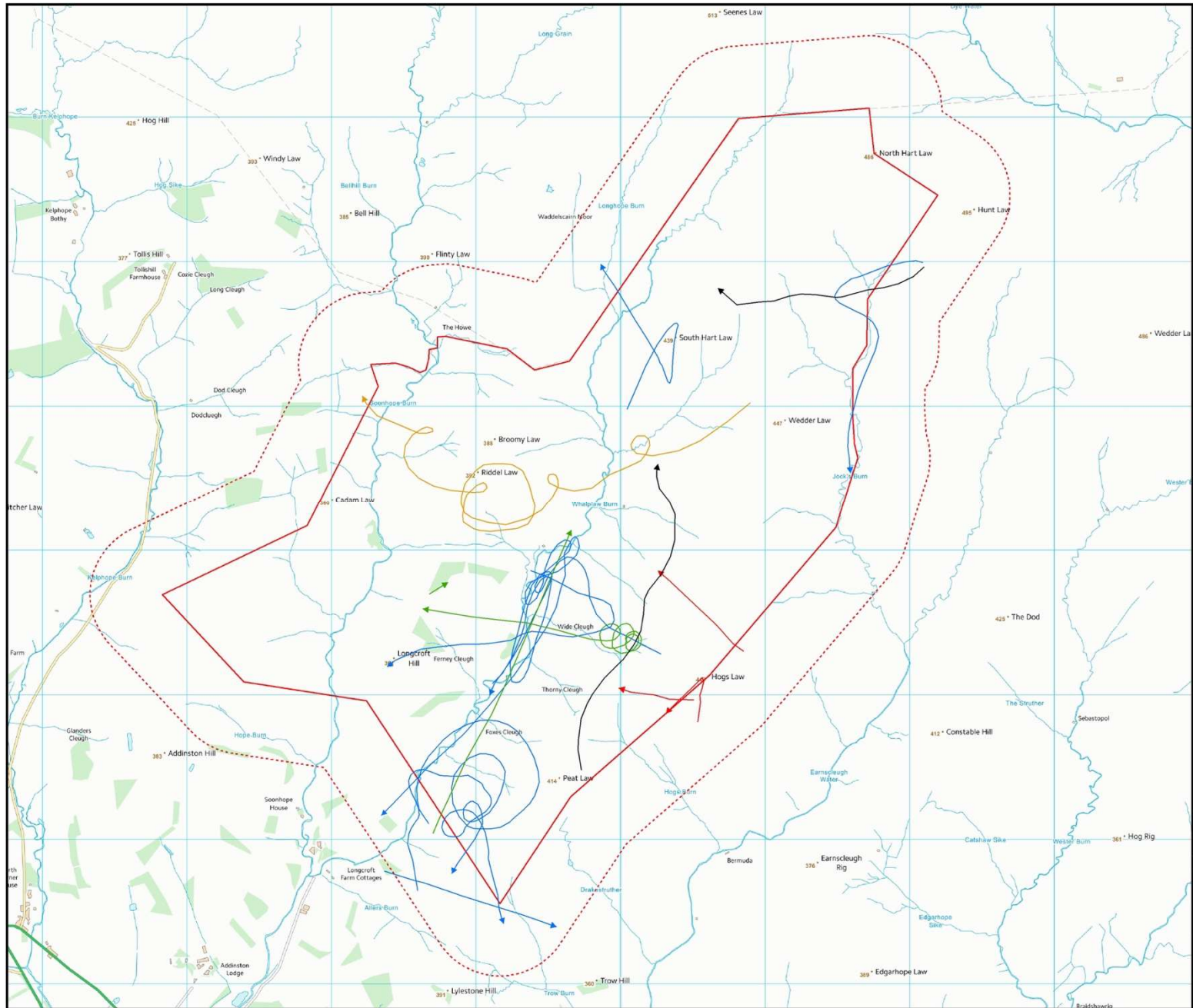
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**WINTERING BIRD
SURVEYS 2022-23**

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**Longcroft Wind Farm:
Wintering Birds 2022-23**

FIGURE 5

**Other Scarce Raptor
Flight Lines**

KEY:

Species

- Golden Eagle
- Goshawk
- Hen Harrier
- Merlin
- Peregrine
- Site Boundary Buffer 500m
- Site Boundary



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REPORT DATE	N/A	PROJECT NO.	N/A
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**WINTERING BIRD
SURVEYS 2022-23**

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CONCLUSIONS

21. The 2021-22 and 2022-23 wintering bird surveys have found a range of wintering bird populations of conservation importance but with generally only low numbers within/in proximity to the proposed wind farm site in numerical terms and/or in the context of their regional (NHZ) populations.
22. Key wintering bird populations recorded included:
 - Over-flying **pink-footed geese**, though no regular flights were apparent to/from the the Fala Flow or Greenlaw Moor SPAs. The only impact of the development on this species would be collision risk, which, given the numbers observed, would be unlikely to be significant.
 - **Red grouse** - resident over most of the higher ground within the survey area.
 - **Red Kite** – flight activity was higher in 2022-23 than recorded previously for this species, which was regularly seen hunting over the survey area, though no areas of particular importance were identified. Collision risk modelling will help inform the impacts of the proposed wind farm on these species, but no specific spatial constraints for them have been identified.
 - **Golden Eagle** – the site is used occasionally by this species, most likely individuals from the South of Scotland Golden Eagle Group release scheme. It is recommended that this group should be contacted to obtain data on their tagged birds using this area, to further inform the ornithological assessment. With only occasional records during the 2022 breeding and one during the 2022-23 winter surveys, the site does not appear from the data available to currently be of importance to this species.
 - **Golden Plover** - there were occasional records through the winter (and most frequently in early spring), but the numbers recorded were low (peak 37 in 2021-22 and 75 in 2022-23) (Figure 5). There was no evidence that the site is important for this species at this time of year.
 - Other raptor species, including **hen harrier**, **goshawk**, **peregrine** and **merlin**, were recorded in low numbers and only infrequently. No evidence was found of any raptor night roosts in the survey area. no design or other mitigation would be likely to be required for them at this stage.
23. Overall, the wintering bird survey results did not indicate any specific ornithological issues that would require taking into account in the design process, or which would be likely to result in any significant impact from a wind farm at this location.

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APPENDIX 1. VANTAGE POINT SURVEY DATA

Survey Information

Date	Vantage Point No	Start time	Finish time	Weather	Observer
26/09/2022	1	12:15	15:15	6-8/8 cloud, 4-5 WSW - WNW wind, very good vis	Stuart Piner
26/09/2022	1	15:45	18:45	3-7/8 cloud, 4-5 NW wind, very good vis, light showers	Stuart Piner
27/09/2022	3	10:45	13:45	4-6/8 cloud, 4-5 NW wind, very good vis, brief light showers	Stuart Piner
27/09/2022	3	14:15	17:15	8-3/8 cloud, 4-5 NW wind, very good vis, brief shower	Stuart Piner
28/09/2022	2	07:45	10:45	6-8/8 cloud, 4 NW wind, very good - ok vis	Stuart Piner
28/09/2022	2	11:15	14:15	6-8/8 cloud, 4 NW wind, very good vis	Stuart Piner
12/10/2022	3	11:15	14:15	8-6/8 cloud, 4 SW wind, ok - very good vis	Stuart Piner
12/10/2022	3	15:00	17:00	3-8/8 cloud, 4-2 SW wind, very good vis, brief showers	Stuart Piner
13/10/2022	1	10:30	13:30	2-1/8 cloud, 1-3 SSE - SSW wind, excellent vis	Stuart Piner
13/10/2022	3	14:45	15:45	4/8 cloud, 3 S wind, excellent vis	Stuart Piner
13/10/2022	2	16:25	18:25	6/8 cloud, 4 S wind, very good vis	Stuart Piner
14/10/2022	2	07:30	10:30	8/8 cloud, 3-2 variable wind, good - very good vis, periods of steady rain	Stuart Piner
14/10/2022	2	11:00	12:00	8-5/8 cloud, 1 variable wind, very good vis, periods of steady rain	Stuart Piner
08/11/2022	3	09:15	12:15	7-8/8 cloud, 3 SSE wind, very good vis, (brief period of ok vis), brief light rain	Stuart Piner
08/11/2022	3	12:45	15:45	8/8 cloud, 2-3 S wind, very good vis	Stuart Piner
09/11/2022	2	07:30	11:00	3-1/8 cloud, 3 WSW wind, excellent vis	Stuart Piner
09/11/2022	2	13:05	16:05	1-5/8 cloud, 4 SW wind, excellent vis	Stuart Piner
10/11/2022	1	07:00	10:00	8/8 cloud, 5 SW wind, very good vis	Stuart Piner
10/11/2022	1	10:30	13:30	6-8/8 cloud, 4-5 SW wind, very good vis	Stuart Piner
12/12/2022	2	09:30	12:30	2-8/8 cloud, 0 wind, very good vis, snow on ground	Stuart Piner
12/12/2022	2	13:00	15:30	6/1-8 cloud, 1 variable to 0 wind, very good vis	Stuart Piner
13/12/2022	3	09:15	12:15	0/8 cloud, 1 NW wind, excellent vis, snow on ground	Stuart Piner
13/12/2022	3	12:45	15:45	0-2/8 cloud, 1-2 NNW-N wind, excellent vis, snow on ground	Stuart Piner
14/12/2022	1	08:00	11:00	0/8 cloud, 3 NW wind, excellent vis, snow on ground	Stuart Piner
14/12/2022	1	13:00	16:00	0/8 cloud, 2 NW wind, excellent vis, snow on ground	Stuart Piner
17/01/2023	2	09:45	12:45	0-2/8 cloud, 2-3 WNW wind, excellent vis	Stuart Piner
17/01/2023	2	13:15	16:15	2-6/8 cloud, 3 WNW wind, very good vis	Stuart Piner
18/01/2023	3	08:50	11:50	2-6/8 cloud, 4 NW wind, excellent vis, snow on ground	Stuart Piner
18/01/2023	3	12:45	15:45	4-6/8 cloud, 4-3 NW wind, very good vis, brief snow shower, snow on ground	Stuart Piner
19/01/2023	1	07:40	10:40	2-6/8 cloud, 3-4 W wind, very good vis, snow on ground	Stuart Piner
19/01/2023	1	14:00	17:00	6-8/8 cloud, 4-5 W wind, very good vis, snow on ground	Stuart Piner
07/02/2023	1	11:00	14:00	6-8/8 cloud, 2-3 SW wind, very good vis	Stuart Piner
07/02/2023	1	14:30	17:30	8/8 cloud, 1-2 SSW wind, very good vis, brief light drizzle	Stuart Piner
08/02/2023	3	07:15	10:15	8/8 cloud, 3 SSW wind, very good vis	Stuart Piner
08/02/2023	3	10:45	13:45	6-8/8 cloud, 4-5 S wind, very good vis	Stuart Piner
10/02/2023	2	08:30	11:30	8/8 cloud, 5 SW wind, very good vis	Stuart Piner
10/02/2023	2	12:00	15:00	8/8 cloud, 5 SW wind, very good vis, drizzle on & off	Stuart Piner
01/03/2023	2	06:20	09:20	8/8 cloud, 3NNE wind, light rain then rain showers, good - very good vis	Stuart Piner
01/03/2023	2	15:00	18:00	7-8/8 cloud, 3-4 NNE wind, light rain showers, good - very good vis	Stuart Piner
01/03/2023	3	10:00	13:00	7-8/8 cloud, 3-4 NNE wind, very good vis, light rain showers	Stuart Piner
02/03/2023	1	06:30	09:30	6-8/8 cloud, 1-2 NE wind, rain showers, very good vis	Stuart Piner
02/03/2023	1	10:00	13:00	4-5/8 cloud, 1-3 NE wind, rain showers, very good vis	Stuart Piner
02/03/2023	3	15:00	18:00	8/8 cloud, 1-3 NE wind, rain showers, very good vis	Stuart Piner



LONGCROFT WIND FARM

Technical Appendix 9.4: WINTERING BIRD SURVEYS 2022-23



Key Species Data

VP	Date	Time	Species	Count	Direction of flight	Flight height (m)	Activity	Time bird observed (sec)	Notes
1	26/09/2022	12:20	PG	36	SW	300		210	
1	26/09/2022	12:28	KT	1		5		2400	
1	26/09/2022	12:40	PE	1	ESE	175		70	
1	26/09/2022	12:43	PG	14	SW	250		180	
1	26/09/2022	13:33	KT	4		21		4980	
1	26/09/2022	13:48	KT	1	N	100		150	
1	26/09/2022	14:15	PE	1	N	150		360	
1	26/09/2022	14:15	PG	30	SSW	300		300	
1	26/09/2022	14:43	PG	4	NE	300		300	
1	26/09/2022	16:02	KT	4		21		9780	up to 4
1	26/09/2022	16:09	KT	2	NE	11		720	left 1
1	26/09/2022	16:50	PE	1	NW	95	hunt	780	juv attacking ravens
1	26/09/2022	17:11	PG	42	SE	300		120	
1	26/09/2022	17:38	PE	1		90	hunt	360	juv, same as 7
1	26/09/2022	17:59	KT	1	NE	15		600	
1	26/09/2022	18:07	PG	95	SSE	250		150	
1	26/09/2022	18:38	PG	37	ENE	300		150	
3	27/09/2022	12:03	PG	85	NNW	300		210	
3	27/09/2022	15:38	PG	136	SSE	155		270	
3	27/09/2022	15:45	PG	33	E	175		180	
2	28/09/2022	07:50	PG	41	SW	300		240	
2	28/09/2022	08:14	ML	1	N	13		35	
2	28/09/2022	08:21	KT	2		31	interacting	420	
2	28/09/2022	09:42	PG	45	NNE	300		240	
2	28/09/2022	09:54	WS	8	SSW	175		330	adults
2	28/09/2022	11:29	PG	56	WSW	150		210	
2	28/09/2022	14:07	KT	1	NNE	50		50	
3	12/10/2022	13:01	KT	1	SE	80		140	
3	12/10/2022	14:03	PE	1	WSW	31		110	adult
3	12/10/2022	16:06	GP	2	SSE	95		150	
1	13/10/2022	08:41	PG	46	SSE	300		330	
1	13/10/2022	09:31	GP	1	NNE	300		120	
1	13/10/2022	10:47	PG	35	SE	300		270	
1	13/10/2022	11:12	PG	1	SE	300		180	
1	13/10/2022	11:24	PG	63	N	300		180	
1	13/10/2022	12:46	EA	1	circle WSW	185		540	imm - 2cy?
3	13/10/2022	15:17	KT	1		30	hunt	1380	landed with prey
2	13/10/2022	17:54	ML	1	NW	17		35	female imm
2	14/10/2022	09:32	GP	6	NNE	60		150	
2	14/10/2022	09:38	GP	6		10		420	landed
3	08/11/2022	10:07	KT	1		5	hunt	420	mobbed by RN
3	08/11/2022	13:58	KT	1	SSW	18		1020	
2	09/11/2022	08:14	KT	2	SSE	110		720	
2	09/11/2022	08:19	GI	1	circle	105		210	juv
2	09/11/2022	10:17	GP	26	WNW	11		70	
2	09/11/2022	14:59	KT	1	SE	55		450	
1	10/11/2022	07:41	KT	2	SW	85		360	
1	10/11/2022	07:50	KT	1		5		150	
1	10/11/2022	08:06	KT	1		10		1920	
1	10/11/2022	08:31	GP	13	WSW	101		660	
1	10/11/2022	08:44	KT	4		15		1200	
1	10/11/2022	09:23	KT	3		28		660	
1	10/11/2022	09:56	KT	4		15		240	until VP end
1	10/11/2022	10:30	KT	3		15		2700	
1	10/11/2022	11:51	KT	4		61		4740	
1	10/11/2022	12:52	KT	1		51		420	
1	10/11/2022	13:06	KT	1		5		240	
2	12/12/2022	09:55	ML	1	WNW	7		20	
2	12/12/2022	13:31	KT	1	SSE	65		420	
3	13/12/2022	13:26	HH	1	WSW	5	hunt	140	female
1	14/12/2022	09:25	PE	1		175		420	
1	14/12/2022	10:32	HH	1	NNE	15	hunt	420	female
2	17/01/2023	15:53	PG	85	SE	225		150	
2	17/01/2023	16:10	PG	10	SSW	300		300	until VP end
1	19/01/2023	14:10	GP	6	NE	20		25	
1	19/01/2023	15:13	KT	1	circle S	125		360	
1	07/02/2023	12:49	GI	1		100		600	
1	07/02/2023	12:57	KT	1	NE	100		130	adult
1	07/02/2023	16:49	L	25		60		360	circling off map on & off since c3pm
3	08/02/2023	08:19	KT	1	ESE	125		30	
3	08/02/2023	09:40	KT	2		125		420	



LONGCROFT WIND FARM

Technical Appendix 9.4: WINTERING BIRD SURVEYS 2022-23



3	08/02/2023	12:26	PE	1	NNE	88		145	adult, mobbed by Rn
2	10/02/2023	09:21	KT	1	SSE	65		150	
2	10/02/2023	09:32	KT	2	ESE	55		120	
2	10/02/2023	12:11	PE	1	ESE	165		660	adult
2	01/03/2023	06:39	GP	2	N	6		95	
2	01/03/2023	07:09	GP	21		60		110	
2	01/03/2023	08:48	GP	2	NE	3		25	
2	01/03/2023	09:10	GP	3	N	10		30	flushed by shepherd
2	01/03/2023	17:20	GP	3		13		1320	
1	02/03/2023	07:15	L	13	ENE	15		30	flew from field
1	02/03/2023	07:21	L	9	NW	200		210	
1	02/03/2023	07:23	L	13		45		7620	until VP end on & off
1	02/03/2023	07:25	L	35		125		7500	joined 5 flock, until VP end on & off
1	02/03/2023	07:32	GP	75		160		7080	until VP end on & off
1	02/03/2023	10:00	GP	60		75		10800	from VP start, on & off throughout VP
1	02/03/2023	10:00	L	40		45		10800	from VP start, on & off throughout VP
1	02/03/2023	10:29	L	1	NNW	103		120	
1	02/03/2023	11:01	L	1	SSE	30		240	
1	02/03/2023	11:02	KT	1		25	hunt	140	
1	02/03/2023	11:09	L	11	NNW	100		100	
1	02/03/2023	11:18	KT	1		43	hunt	300	
1	02/03/2023	11:59	GI	1	NE	4	hunt	5	female
1	02/03/2023	12:05	L	2	SSE	175		180	

